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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,060	11/18/2003	John S. Hsu	1216.1	6998

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Kirk A. Wilson
UT-Battelle, LLC
MS 6498
P O Box 2008
Oak Ridge, TN 37831

EXAMINER	
ZEC, FILIP	

ART UNIT	PAPER NUMBER
3744	

DATE MAILED: 05/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/716,060	HSU ET AL.	
	Examiner	Art Unit	
	Filip Zec	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/18/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 12, 15, 17 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,092,372 to Russo. In FIG. 5a, Russo teaches a method and an apparatus for cooling an inverter/converter comprising, a thermally isolated housing (136), a hermetic container (inner container of a dewar type vessel, col 7, lines 44-46) at least partially disposed in said thermally isolated housing, an ambient cooling zone (evacuated space, col 7, lines 44-46) disposed interstitially between said hermetic container and said thermally isolated housing for indirect non-contact cooling of inverter/converter components, a liquid refrigerant zone (132) at least partially disposed in said hermetic container for direct liquid refrigerant contact cooling of inverter/converter components, a vapor refrigerant zone (134) at least partially disposed in said hermetic container adjacent said liquid refrigerant zone for direct vapor refrigerant contact cooling of inverter/converter components (col 7, line 68; col 8, lines 1-10); wherein said hermetic container further comprises a liquid refrigerant inlet (118b) and a vapor refrigerant outlet (122) and wherein said refrigerant is selected from the group consisting of the phase change working fluids listed in ASHRAE Standard 34-2001 (Nitrogen, abstract).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2, 5, 10, 16, 19 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,092,372 to Russo, in view of U.S. Patent 6,219,245 to Nagashima et al. Russo discloses applicant's basic inventive concept, a method and an apparatus for cooling an inverter/converter, substantially as claimed with the exception of stating that said hermetic container is a pressure vessel material selected from the group consisting of metals and that said hermetic container further comprises a sealed power connector and a sealed signal connector; wherein said hermetic container further comprise EMI shielding made of metal mesh and wherein said cooling system cools power components of hybrid and full electric vehicles. Nagashima shows a hermetic container (12, FIG. 1) made of material selected from the group consisting of metals (col 1, lines 28-29) wherein said hermetic container further comprises a sealed power connector and a sealed signal connector (col 1, lines 30-32), wherein said hermetic container further comprises EMI shielding made of metal mesh (col 1, lines 25-30) and wherein said cooling system cools power components of hybrid and full electric vehicles (col 1, 5-10) to be old in the thermal isolation art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Nagashima to modify the system of Russo, by specifying that the hermetic container is a pressure vessel material selected from the group consisting of metals and that said hermetic container further comprises a sealed

power connector and a sealed signal connector, wherein said hermetic container further comprises EMI shielding made of metal mesh and wherein said cooling system cools power components of hybrid and full electric vehicles in order to significantly reduce the radiated EMI outside of the chassis, as compared to conventional liquid-cooled heat sinking assemblies (col 2, lines 20-33). Nagashima teaches that, when using this configuration, one not only provides electrical isolation of the coolant from the chassis housing, but does so in a manner that significantly reduces the parasitic capacitance between the switching devices and chassis housing (col 2, lines 21-23).

5. Claims 4 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,092,372 to Russo, in view of U.S. Patent 3,006,157 to Haettinger et al. Russo discloses applicant's basic inventive concept, a method and an apparatus for cooling an inverter/converter, substantially as claimed with the exception of stating that said hermetic container further comprises at least one cooling fin, wherein said vapor refrigerant outlet further comprises an extended outlet coil at least partially disposed in said ambient cooling zone. Haettinger shows a vapor refrigerant outlet (32, FIG. 1) further comprising an extended outlet coil (24, FIG. 1) at least partially disposed in said ambient cooling zone (area 18, FIG. 1) to be old in the refrigeration art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Haettinger to modify the system of Russo, by employing refrigerant filled coils outside of the hermetic container in order to cool the ambient zone and provide more cooling capacity to the overall system.

6. Claims 6-8 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,092,372 to Russo, in view of U.S. Patent 4,635,709 to Altoz et al. Russo discloses

applicant's basic inventive concept, a method and an apparatus for cooling an inverter/converter, substantially as claimed with the exception of stating that said hermetic container further comprises at least one cooling fin, wherein said cooling fins are refrigerant filled and of solid material. Altoz shows at least one cooling fin (18 and 16, FIG. 3), wherein said cooling fin is refrigerant filled (col 3, lines 52-53) and of solid material (heat conductive aluminum system, col 3, lines 15-20), to be old in the refrigeration art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Altoz to modify the system of Russo, by adding refrigerant filled solid fins in order to remove extra heat via conduction.

7. Claims 9 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,092,372 to Russo, in view of U.S. Patent 6,304,448 to Fukada et al. Russo discloses applicant's basic inventive concept, a method and an apparatus for cooling an inverter/converter, substantially as claimed with the exception of stating that said hermetic container comprises EMI shielding made of metal foil. Fukada shows a hermetic container (1, FIG. 1), wherein said hermetic container further comprises EMI shielding made of metal foil (col 4, line 62) to be old in the thermal isolation art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Fukada to modify the system of Russo, by specifying that the hermetic container further comprises EMI shielding made of metal foil in order to significantly reduce the radiated EMI outside of the chassis and lessen the manufacturing costs (col 4, lines 54-58).

8. Claims 11, 13-14, 25 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,092,372 to Russo, in view of U.S. Patent 5,878,589 to Tanaka et

al. Russo discloses applicant's basic inventive concept, a method and an apparatus for cooling an inverter/converter, comprising a cooling chamber, substantially as claimed with the exception of stating that said chamber is disposed as a liquid refrigerant accumulator component of a vapor compression refrigeration system, wherein said chamber is disposed as an intermediate-temperature evaporator component of a vapor compression refrigeration system or is disposed in an intermediate pressure suction tapping line. Tanaka shows that a cooling chamber can be disposed as a liquid refrigerant accumulator component of a vapor compression refrigeration system (24, FIG. 1), wherein said chamber is disposed as an intermediate-temperature evaporator component (28a and 28b, FIG. 1) of a vapor compression refrigeration system (col 9, lines 5-58) or is disposed in an intermediate pressure suction tapping line (col 11, lines 30-35), to be old in the vehicle refrigeration art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Tanaka to modify the system of Russo, by using the cooling chamber as a cooling element in a vapor compression system in order to improve the heating capacity effectively and to simplify the construction of the heating part cooling system drastically (col 3, lines 65-68; col 4, lines 1-5).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,023,934 to Gold, Calman teaches methods and an apparatus for cooling systems for cryogenic power conversion electronics.

U.S. Patent 4,970,868 to Grebe, Kurt R. teaches an apparatus for temperature control of electronic devices.

U.S. Patent 6,138,469 to Davidson, Howard L. et al. teaches a refrigeration system for electronic components having environmental isolation.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Filip Zec whose telephone number is (571) 272-4815. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Filip Zec
Examiner
Art Unit 3744

CHERYL TYLER
SUPERVISORY PATENT EXAMINER

FZ